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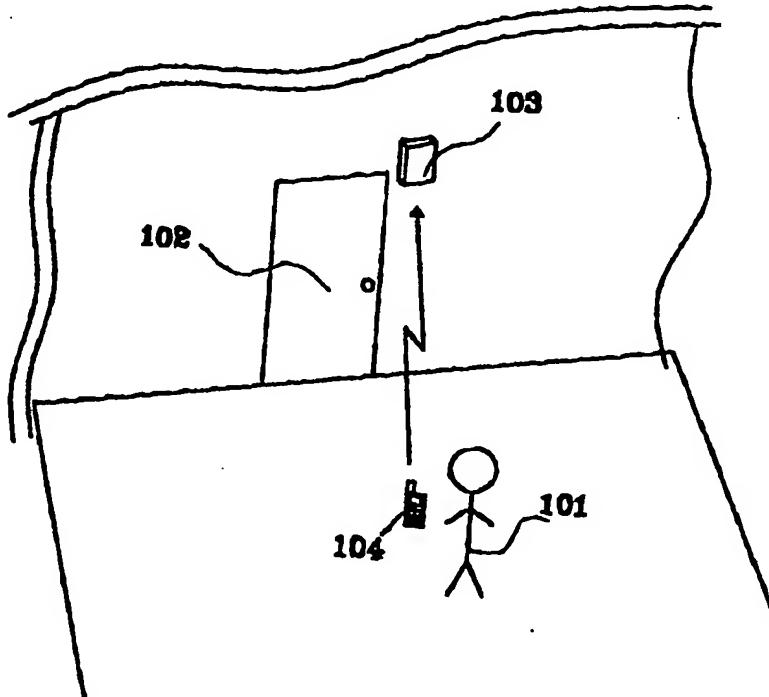
With international search report.

Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.

## (54) Title: SECURITY SYSTEM FOR ADMITTING A USER HAVING A CELLULAR PHONE TO VISIT A SECURITY AREA

## (57) Abstract

The present invention provides a security system for admitting a user (101), having a standard cellular telephone (104), into, or allowing a user to visit, a security area. Said security system being flexible, supporting multiple users each having a unique standard cellular telephone and possibly multiple locks individually responsive to each standard cellular telephone.



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## SECURITY SYSTEM FOR ADMITTING A USER HAVING A CELLULAR PHONE TO VISIT A SECURITY AREA

## TECHNICAL FIELD OF INVENTION

The present invention relates in generally to a security system for admitting a user to visit a security area, and more 5 specifically, to a security system for admitting a user using a standard cellular phone.

## DESCRIPTION OF RELATED ART

In cellular telecommunication systems cellular telephones are equipped with a hardware code uniquely identifying each phone 10 to the system. Such a code is for instance called IMEI code in the GSM system. If a owner to a cellular phone for some reason loses his phone, for instance due to theft, he may prohibit the thief or someone else from using his phone by reporting it as stolen to the telecommunication operator. Not only will his 15 specific telephone account be closed but his specific telephone will also be useless, since the unique IMEI code is placed on a blacklist and the telephone system will refuse to connect calls using hardware which is present at the blacklist.

20 Thus, has each cellular telephone a unique number which uniquely identifies the specific telephone.

Different sorts of electronic keys are known, such as for instance radio keys used to open garage doors. Such radio keys may comprise a identification code, which is sent when a user 25 press a button, and which is identified by a receiver opening the garage door. Such radio keys are somewhat expensive to produce and are not very flexible in their application. For instance can it be cumbersome to handle several different doors and several different users.

It would therefore be beneficial if a more flexible security system could be achieved for admitting a user to a security area where several different persons have, or do not have, access to different security areas through several different 5 locked doors.

#### SUMMARY OF INVENTION

The object of the present invention is thus to provide a security system for admitting a user, having a standard cellular telephone, into, or allowing a user to visit, a 10 security area. Said security system being flexible, supporting multiple users each having a unique cellular telephone and possibly multiple locks individually responsive to each cellular telephone.

15 The objects of the present invention, described above, are obtained by providing a system according to claim 1.

An advantage of the present invention is that a flexible security system is achieved which uses standard cellular telephones as electronic radio keys.

20 Another advantage is that the security system may control a door for admitting a user to enter a specific area, or may with regular intervals check if a user is present in a specific area.

25 Another advantage with the present invention is that a security system with high flexibility and good security is achieved with very low-cost means.

Further scope of applicability of the present invention will become apparent from the detailed description given hereinafter. However, it should be understood that the

detailed description and specific examples, while indicating preferred embodiments of the invention, are given by way of illustration only, since various changes and modifications within the scope of the invention will become apparent to 5 those skilled in the art from this detailed description.

#### **BRIEF DESCRIPTION OF THE DRAWINGS**

The present invention will become more fully understood from the detailed description given hereinbelow and the accompanying drawings which are given by way of illustration 10 only, and thus are not limitative of the present invention and wherein

Figure 1 shows a diagrammatic view of a preferred embodiment according to the present invention;

15 Figure 2 shows a schematic block diagram of a preferred embodiment according to the present invention;

Figure 3 shows a schematic block diagram of another preferred embodiment according to the present invention;

#### **DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS**

In figure 1 a user 101 is approaching a door 102 leading to a 20 security area. It shall be understood that the term security area is used, in the present text, in a very broad sense. It may thus not necessarily indicate an area with extremely high security requirements, though such areas are of course included, but may also include any area behind a locked door, 25 such any ordinary housing.

Said user 101 has a standard cellular telephone 104, in this preferred embodiment a GSM telephone, though any standard cellular telephone comprising a unique hardware code may be

used, which, upon request, or on a regular basis, sends a IMEI message. This IMEI message is received by a security apparatus 103 being connected to the locking function of said door 102. The security apparatus 103 may be designed, or tuned, to only receive signals which are sent within a specified area from said security apparatus 103, so that distant cellular telephones, sending IMEI messages, do not affect the locking function of the door 102. The function of said security apparatus 103 are more detailed in figure 2.

10 Figure 2 shows a schematic block diagram of the security apparatus shows in figure 1. The standard cellular telephone 104 sends a IMEI message which is received by a broadband receiver 201 comprising an antenna 202. The broadband receiver is broadband in terms of receiving the complete GSM band. In 15 another preferred embodiment the broadband receiver may be designed to receive a much wider band, or several separated bands, such as both the GSM and the PCN band. The messages received by the broadband receiver is forwarded to a GSM message decoder 203. The GSM message decoder is designed only 20 for recognising a GSM IMEI message and may therefore be a relatively low-cost implementation. Connected to the GSM message decoder 203 is an I/O (input/output) device 204 for storing, retrieving and deleting records in a register 205 located in the GSM message decoder. The I/O device 204 is used 25 to store IMEI codes in the register 205. When a IMEI message is received and decoded it is compared with the stored IMEI codes, and if a match occur, that is if the decoded IMEI is present in the stored set of IMEIs, the GSM decoder signals to a validating device 206 which unlocks the door 102 admitting 30 the user 101 access to the security area behind the door 102.

In another preferred embodiment the storing of IMEI codes may be performed through the radio interface, comprising the broadband receiver 201. In this case the GSM message decoder is also arranged to receive digits, as well as instructions 5 for storing a sequence of digits in said register 205.

Figure 3 shows another preferred embodiment according to the invention, where the security apparatus comprises a transmitting device 301 coupled to the antenna 202 and the GSM message decoder 203. With this arrangement the security 10 apparatus may send a message to cellular phones within reach requesting transmission of the IMEI code.

The security apparatus may also fetch other data from the cellular phone such as the telephone number of a telephone subscription installed in said phone, a digit sequence entered 15 on the cellular phone by said user, or other types of information which may be combined with the IMEI for increased security.

According to yet another preferred embodiment the security apparatus may be mounted in a corridor or in a room for 20 surveillance purposes. It may then transmit an alarm signal to a security service or may sound an alarm if a non-authorised person is visiting the room or corridor.

## CLAIMS

1. Security system, comprising a security apparatus (103), for admitting a user (101), having a cellular phone (104), to visit a security area,
  - 5 - said phone being arranged for transmitting a first standardised identity code, unique for said particular phone, according to a first standardised cellular system specification, characterised in said security apparatus comprising,
    - 10 - a broadband receiver arranged for receiving signals in at least said first cellular system,
    - a cellular system signal decoder arranged for decoding said signal and storing said transmitted identity code,
    - a register arranged for storing at least a first set of identity codes,
    - 15 - validating means arranged for admitting said user dependent on if said decoded identity code is in said first set of identity codes.
2. Security system according to claim 1, wherein
  - 20 - said security apparatus further comprises a input/output means for storing identity codes in said register.
3. Security system according to claim 1 or 2, wherein
  - 25 - said validating means issue an alarm if said decoded identity code is not in said first set of identity codes.
4. Security system according to claim 1 or 2, wherein
  - said validating means opens a lock if said decoded identity code is in said first set of identity codes.
- 30 5. Security system according to any of claims 1-4, wherein

- said broadband receiver is arranged for receiving a second set of digits from said cellular phone,
- said register is arranged for storing each post in said first set of identity codes together with a second set of digits,

5

- said validating means is arranged for validating said user dependent on if said decoded identity code is in said first set and if said received second set of digits corresponds to said second set of digits stored in said register together with said identity code.

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6. Security system according to any of claims 1-5, wherein

- said security system performs said validation with regular time intervals.

7. Security system according to any of claims 1-6, wherein

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- said security apparatus comprises a transmitter arranged for sending a request for said identity code to said cellular phone .

8. Security system according to any of claims 1-7, wherein

- said identity code is an IMEI code.

20 9. Security system according to any of claims 1-8, wherein

- said standardized cellular system is selected from a group of systems including GSM, PCN, DECT, AMPS, D-AMPS.

10. Security apparatus for validating a user as specified in

25 any of claims 1-9.

11. Use of a cellular phone for validating a user, wherein

- said cellular phone is used as specified in any of claims 1-9.

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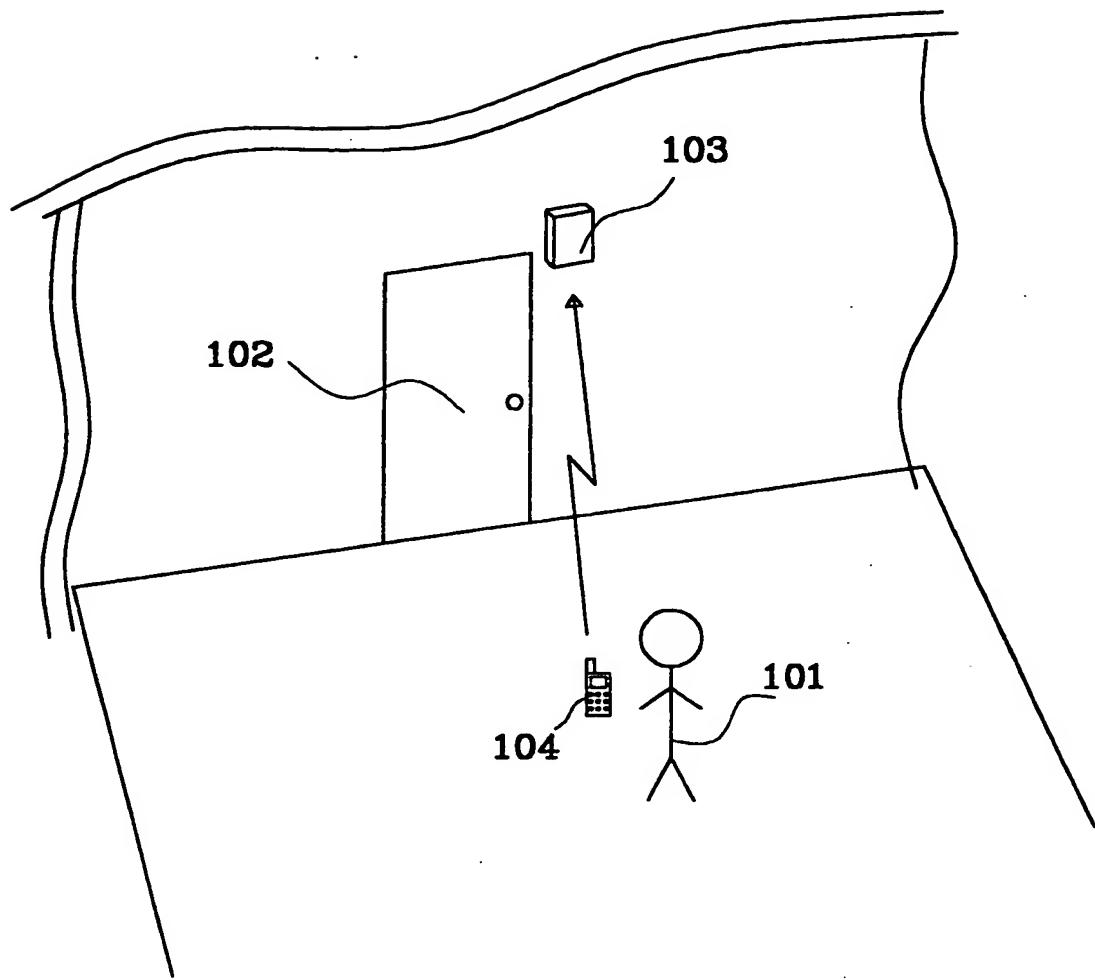


Fig. 1

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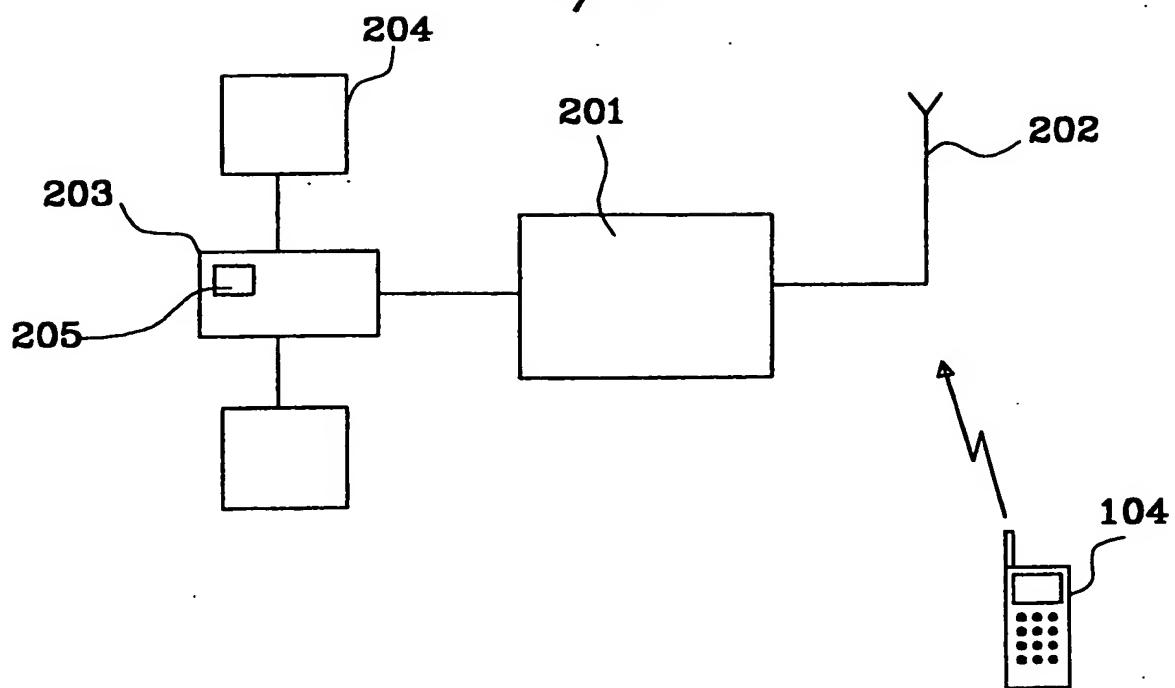


Fig. 2

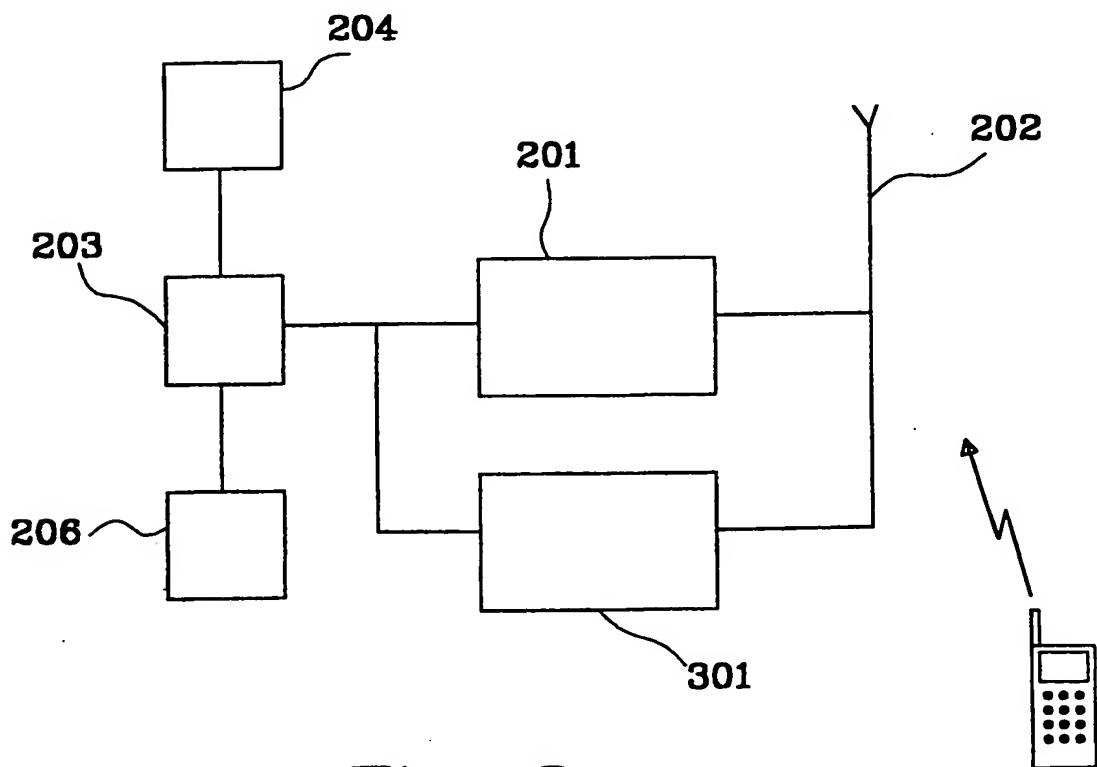


Fig. 3

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INTERNATIONAL SEARCH REPORTInternational application No.  
PCT/SE 00/00178

## A. CLASSIFICATION OF SUBJECT MATTER

IPC7: H04M 11/04, H04M 11/00

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7: H04M

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

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## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 9314571 A1 (SUPRA PRODUCTS, INC.), 22 July 1993 (22.07.93), page 4, line 1 - line 4; page 5, line 5 - line 8; page 13, line 8 - line 14 --	1-11
X	GB 2230365 A (OLIVETTI RESEARCH LTD.), 17 October 1990 (17.10.90), page 12, line 21 - page 16, line 15, claims 14-20 --	1-11
X	US 5541585 A (DUHAME ET AL.), 30 July 1996 (30.07.96), column 1, line 45 - column 2, line 28; column 4, line 20 - column 5, line 13 --	1-11

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## C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 9816080 A2 (AT & T WIRELESS SERVICES, INC.), 16 April 1998 (16.04.98), page 5, line 3 - line 38; page 7, line 6 - page 8, line 2 --	1-11
A	US 5646605 A (LEONAGGEO ET AL.), 8 July 1997 (08.07.97), column 1, line 41 - column 2, line 63 --	1-11
A	DE 29805758 U1 (STENTOFON ELECTRONIC GMBH), 2 July 1998 (02.07.98), page 1 - page 4, line 21 --	1-11
A	WO 9207429 A1 (SMITH MYERS COMMUNICATIONS LIMITED), 30 April 1992 (30.04.92), page 4, line 25 - page 5, line 20 -- -----	1-11

**INTERNATIONAL SEARCH REPORT**  
Information on patent family members

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PCT/SE 00/00178	

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9314571 A1	22/07/93	AT 155912 T AU 673983 B AU 691137 B AU 1229497 A AU 2589492 A BR 9207033 A DE 69221165 D,T EP 0639287 A,B SE 0639287 T3 ES 2106883 T HK 1001598 A JP 2894515 B JP 7502871 T US 5475375 A US 5654696 A US 5705991 A US 5815557 A	15/08/97 05/12/96 07/05/98 13/03/97 03/08/93 05/12/95 27/11/97 22/02/95 16/11/97 00/00/00 24/05/99 23/03/95 12/12/95 05/08/97 06/01/98 29/09/98
GB 2230365 A	17/10/90	GB 2260208 A,B US 5402469 A	07/04/93 28/03/95
US 5541585 A	30/07/96	NONE	
WO 9816080 A2	16/04/98	US 5875395 A	23/02/99
US 5646605 A	08/07/97	WO 9601542 A	18/01/96
DE 29805758 U1	02/07/98	NONE	
WO 9207429 A1	30/04/92	AU 8716091 A EP 0553152 A GB 2250895 A,B US 5542120 A	20/05/92 04/08/93 17/06/92 30/07/96